Water Resource Problems and Solutions for South Carolina

Water Resources Workshop - May 31, 2

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www.scdhec.gov

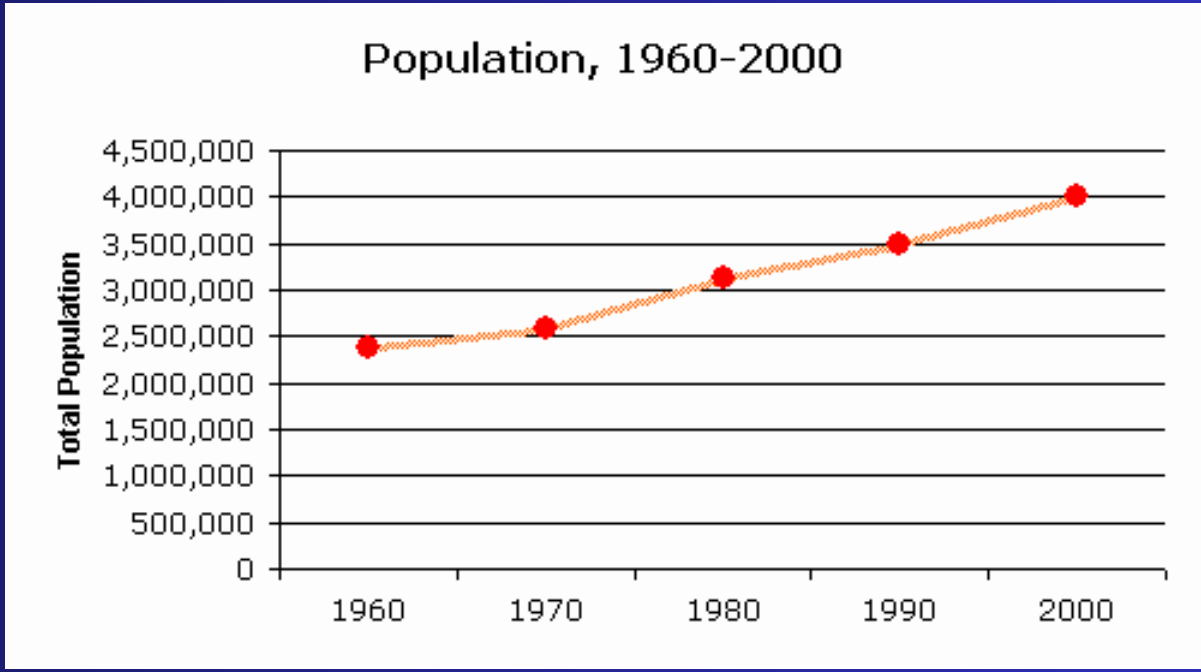
What Goals Do We Have for SC's Water Resources?

- Clean and abundant drinking water
- Clean places to swim and recreate
- Adequate stream flows to protect aquatic biology, supply industry process water, sufficient assimilative capacity
- Fish and shellfish safe to eat

Current Challenges in Meeting This Goal

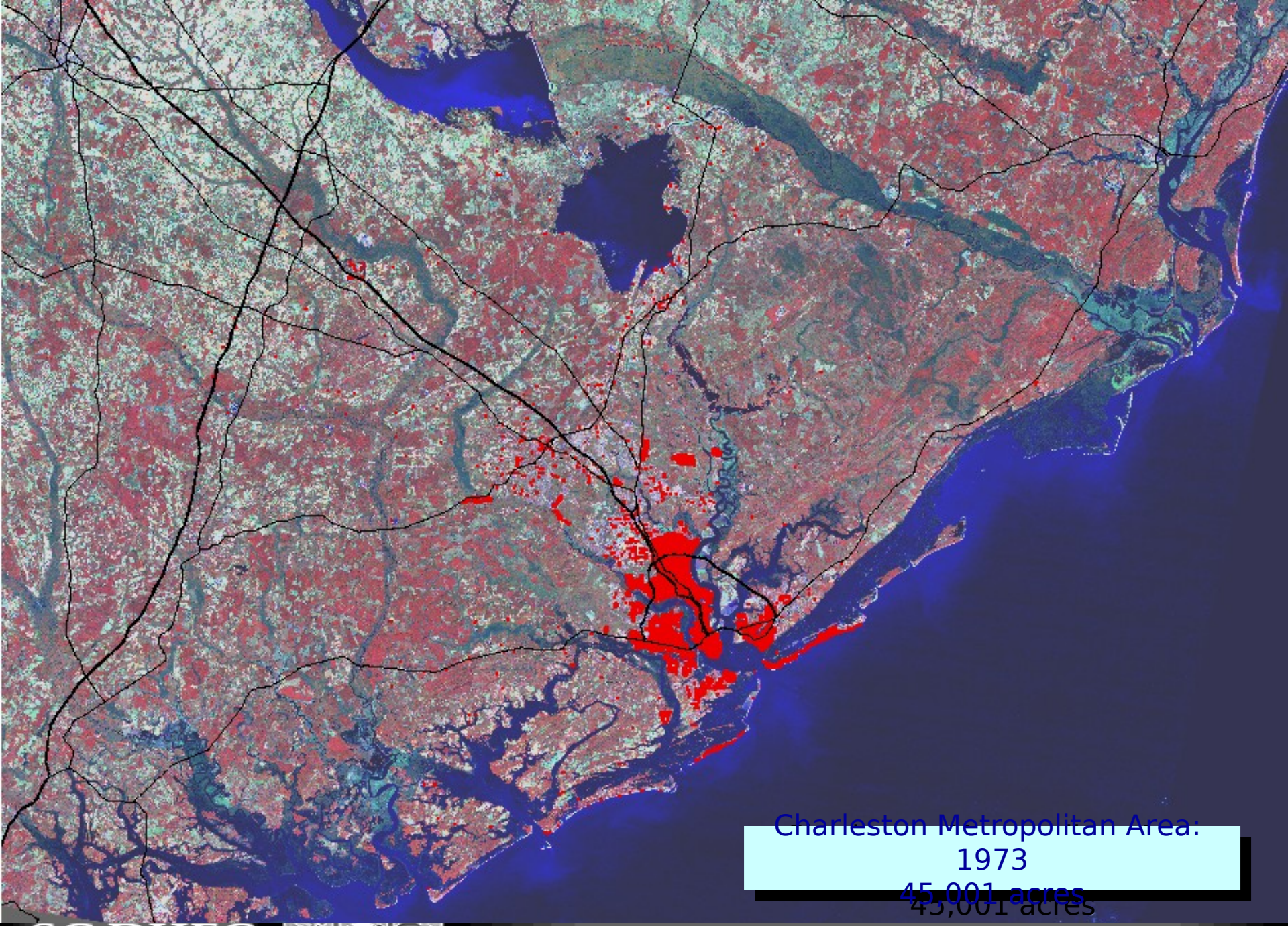
- Population growth, especially in coastal areas
- Non-point source pollution
- Lack of recognition that, even in the humid southeast, water resources have a limit for availability and waste assimilation

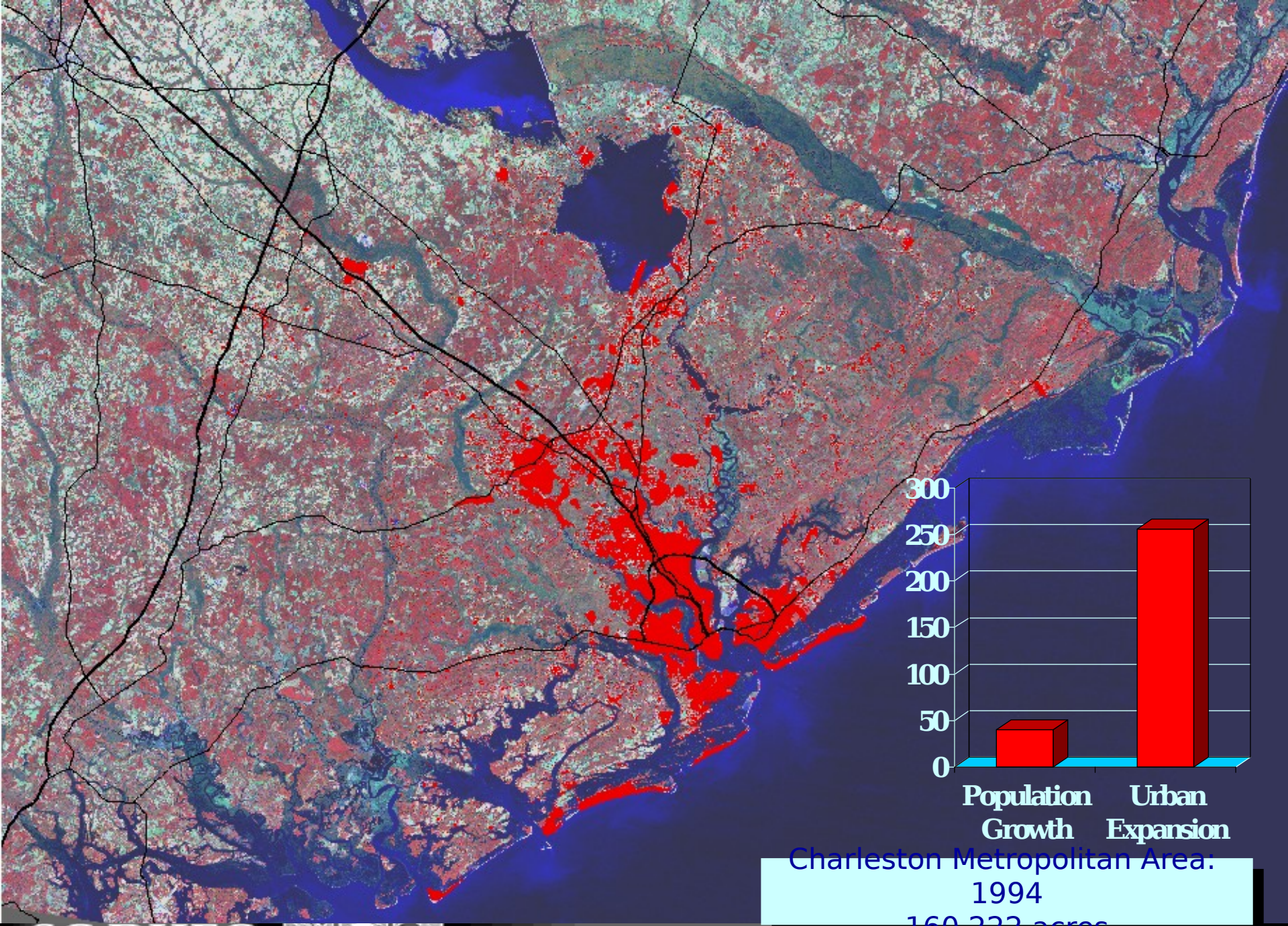
South Carolina Population Growth



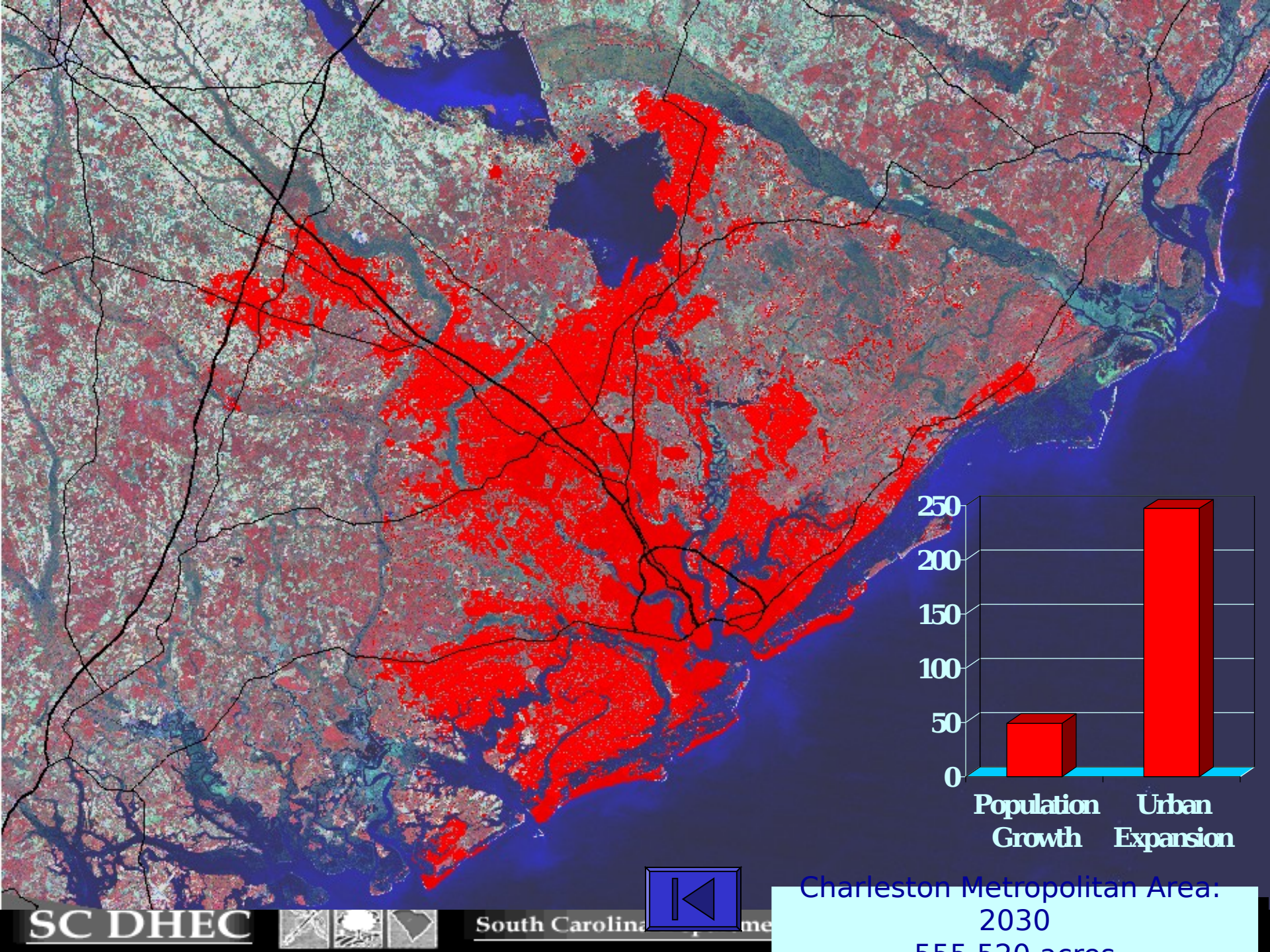
Population Growth and Increased Demands for Groundwater in Coastal South Carolina

- Between 1973 and 1994, the population in Berkeley, Dorchester, and Charleston counties increased by 40 percent
- During this same time, the land area developed for urban use increased by more than 250 percent


Charleston Metropolitan Area:
1973
45,001 acres

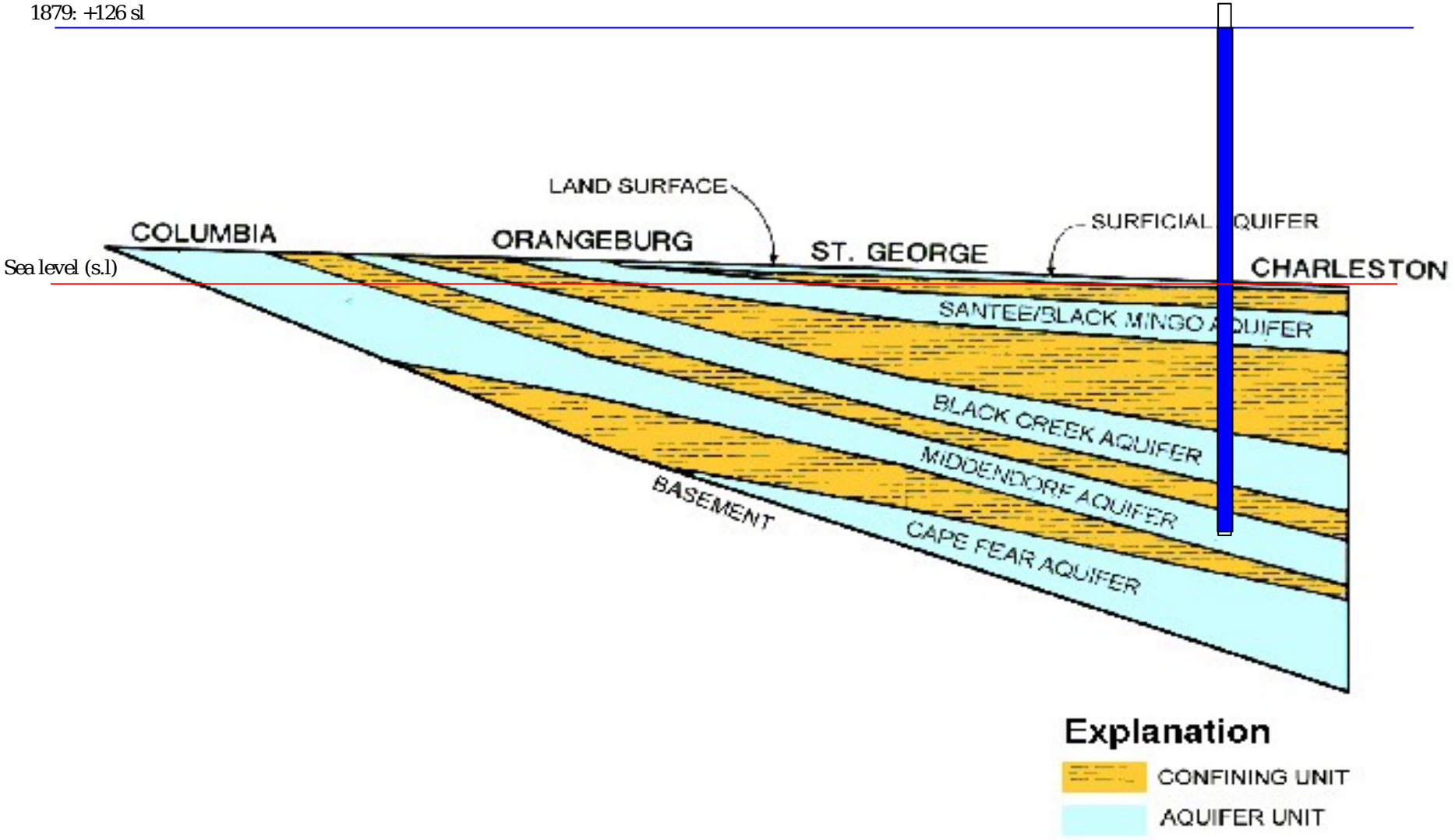


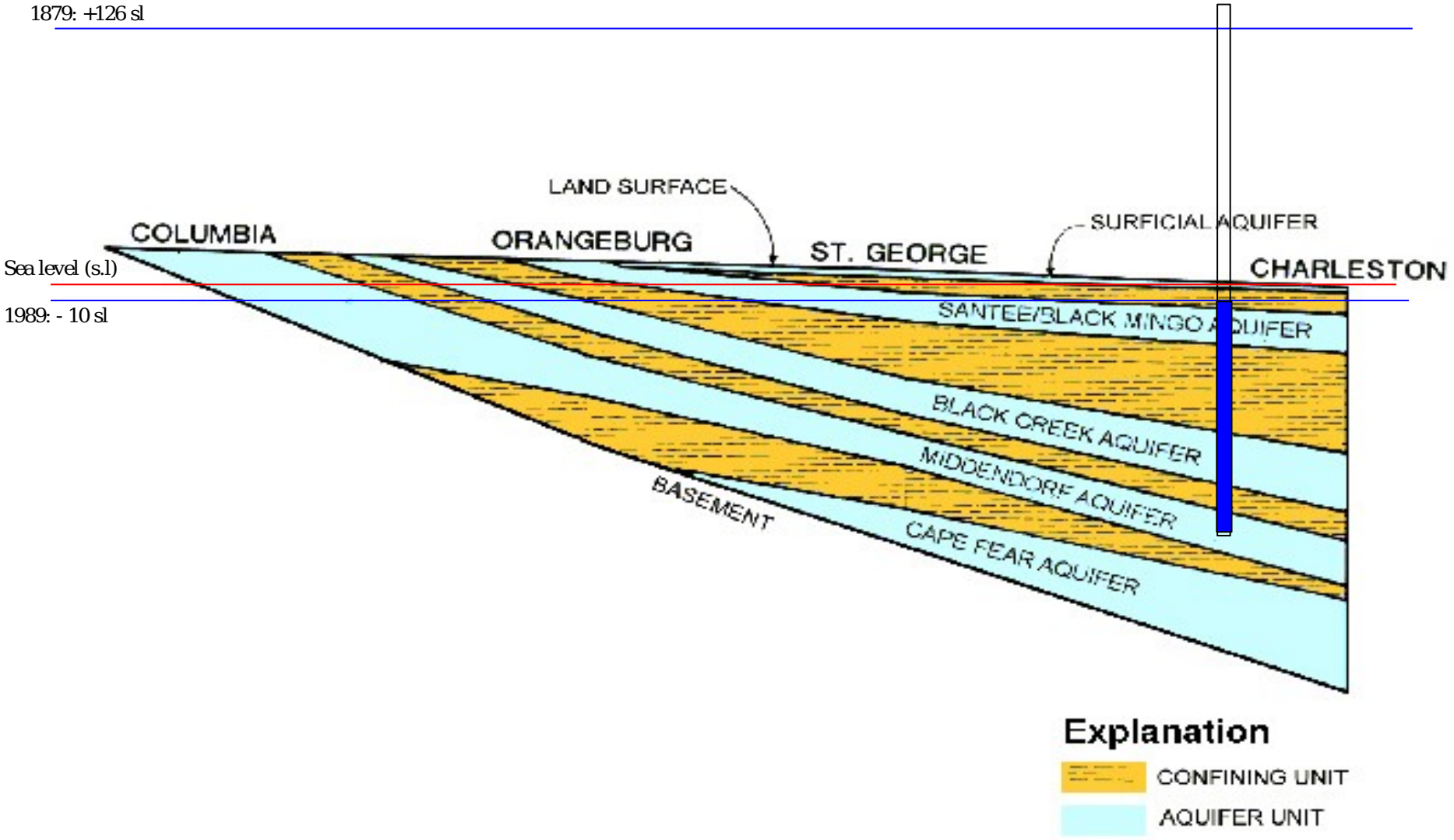
Charleston Metropolitan Area:
1994
160,222 acres



Charleston Metropolitan Area:
2030
555,530 acres

1879: +126 sl


LAND SURFACE
SURFICIAL AQUIFER
COLUMBIA
ORANGEBURG
ST. GEORGE
CHARLESTON
Sea level (s.l)
SANTEE/BLACK MINGO AQUIFER
BLACK CREEK AQUIFER
MIDDENDORF AQUIFER
CAPE FEAR AQUIFER
BASEMENT
Explanation
CONFINING UNIT
AQUIFER UNIT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LAND SURFACE
SURFICIAL AQUIFER
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Sea level (s.l)
1989: - 10 sl
SANTEE/BLACK MINGO AQUIFER
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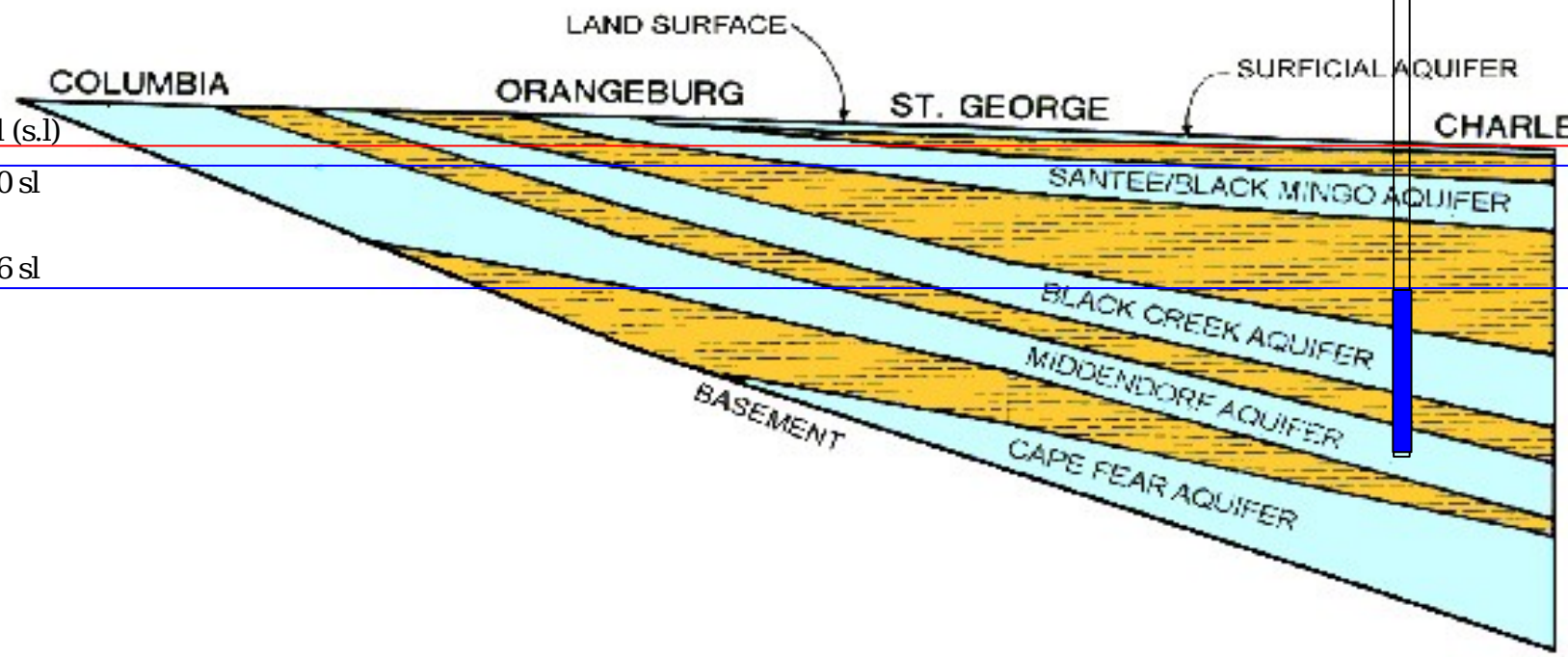


Sea level (s.l)

1989: -10 sl

2000: -56 sl

Explanation

CONFINING UNIT

AQUIFER UNIT

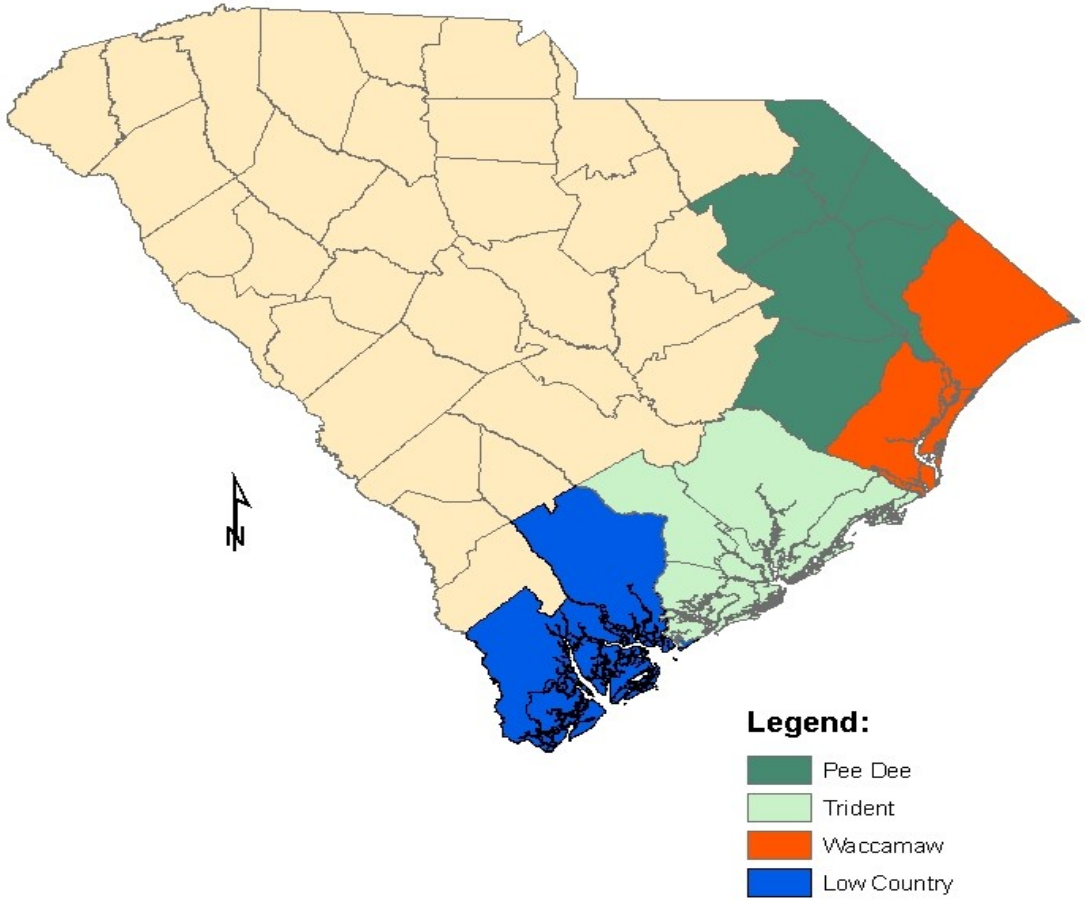
Solutions to Assist Us in Meeting Our Goals

- Capacity Use Program
- Watershed Planning and 319 Funding for Local Projects
- State Revolving Fund (SRF)
- Source Water Protection
- Surface Water Permitting

Capacity Use Program

- In Capacity Use Areas, any withdrawal of groundwater over 3 million gallons in any month must be permitted
- Permit holders annually report actual groundwater withdrawals and uses
- Local groundwater management plans

Designated Capacity Use Areas in South Carolina



Taking Waterbodies from Impaired to Improved

SC's Watershed Planning

SC Watersheds

It all starts with the 303(d) list

- Basis for permits, TMDLS, projects, etc
- 2006 list submitted
  - 586 stations listed
  - 747 impairments
  - 299 impairments de-listed
    - Standard attained – 101
    - TMDL developed – 198
- Each station dictates an individual watershed

Then onto TMDLs…

- Developed in-house and by contractors
- Over 300 approved
- Most TMDLs are for fecal coliform
- Will complete at least 20 TMDLs in FY06

Locate by:

Alphabetical Listing

Parameter of Concern

Watershed Area

Approved TMDLs - Alphabetical listing

Waterbody	Parameter of Concern	Sites
AIWW-Waccamaw River	Dissolved Oxygen	MD-110, MD-111, MD-136, MD-127, MD-089, MD-088, MD-146, MD-137, MD-087,MD-085, MD-091, MD-125
Allison Creek	Fecal Coliform	CW-171
Ashley River	Dissolved Oxygen	CSTL-102, MD-049
Beaverdam Creek	Fecal Coliform	SV-345
Beaverdam Creek	Fecal Coliform	CW-153
Big Generostee Creek	Fecal Coliform	SV-316
Big Wateree Creek	Fecal Coliform	CW-072
Big Wateree Creek	Turbidity	CW-072
Brown Creek	Fecal Coliform	CW-105
Brushy Creek	Fecal Coliform	BE-009, BE-035
Bush River	Fecal Coliform	S-046 & S-102
Calabash Branch	Fecal Coliform	CW-134
Camp Creek	Fecal Coliform	CW-235

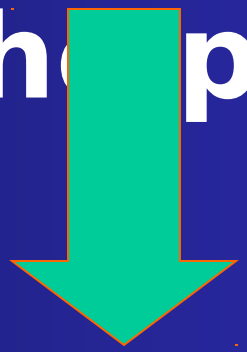
It's on the 303(d) list.

There's a TMDL.

So what?

- **Permitting**
- **Compliance**
- **MS4s**
- **Modeling**

If permits and enforcement can't correct the problem…



Section 319 TMDL Implementation Projects

Implementing TMDLs

18 Implementation Projects

- **60 watersheds**
- **$5.8 million federal funding**
- **$8.7 million total funding**
- **Local partnerships with local expertise**
- **Project workplans are written as Watershed-Based Plans**

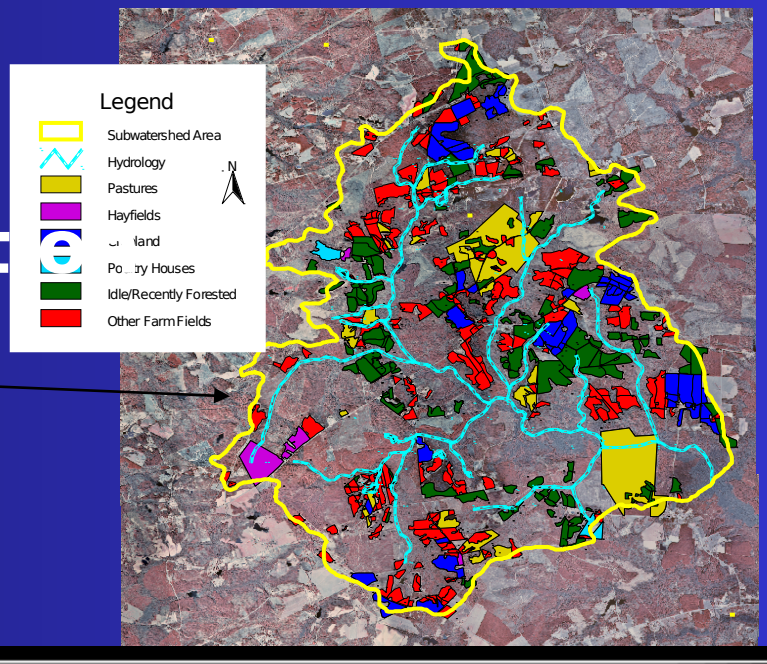
Local-level Planning

Thermal imagery

- Locates illicit discharges and failing septic tanks
- Identifies hotspots

Land Use Characterizat

- Identifies current land uses in each subwatershed
- Directs funds to most effective locations



MEASURABLE Improvements

- **Meeting Standards**
- **Reducing pollutants**

x 750= **Amount of sediment kept out of SC waters EACH YEAR**

- **Restored waterbodies**
  295 since 2000

State Revolving Fund (SRF)

- Provides low-interest financing
  - 20 year loans
  - Rates below market rate
  - Special help for taking over non-viable small systems

State Revolving Fund (SRF)

- Most loans made for improvements to public water and sewer systems:
  - Upgrading water and wastewater treatment plants
  - Adding elevated storage for water systems
  - Repairing sewer systems to reduce infiltration/inflow

State Revolving Fund (SRF)

- Assistance can also be made for:
  - Projects to remedy non-point source pollution
  - Technical assistance
  - Developing business plans to improve financial and managerial strength

South Carolina's Source Water Assessment & Protection Program

South Carolina Drinking Water

- About 60% of our population uses surface water as their drinking water source, about 40% groundwater
- About ½ of those on groundwater use their own residential well
- ~1500 Public Water Systems
  - 2508 Water Supply Wells
  - 83 Surface Water Intakes

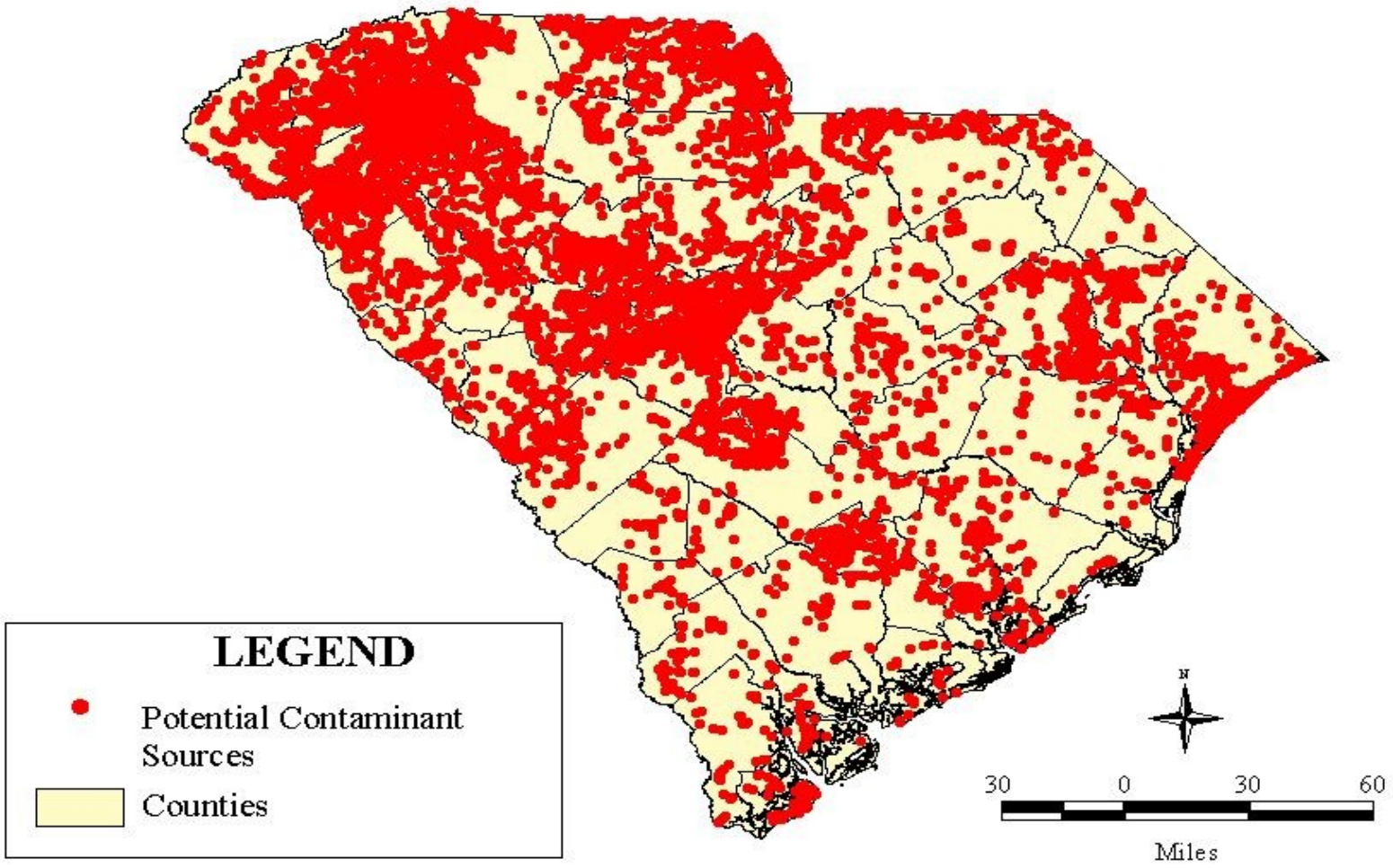
SWP Assessments

- Define where water comes from
- Delineate a protection area
- Inventory potential contaminant sources within that protection area
- Susceptibility analysis
- Make results available to the water system and the public

Potential Contaminant Inventory

- Approximately 15,000 potential contaminant sources identified
- Inventory includes GIS coverage (lat/long of each PCS) and database (type of chemicals, type of facility, etc.)

Potential Contaminant Sources



Assessment Status

- A complete copy of the Assessment Report was mailed to each PWS in May 2003 (detailed maps, list of all PCS with addresses, chemicals, etc.)
- A modified copy of the Assessment Report is posted on our web site and is available for public review (general map not identifying well or intake location, no addresses of PCSs)

Now What?

- Develop and implement local plans to implement measures to reduce risk of contamination of the drinking water source

Surface Water Permitting

- DHEC currently regulates only interbasin transfers
- Senator Hayes has introduced Bill 1159
- Would require a permit for any surface water withdrawal over 3 million gallons in any one month
- Necessary to keep minimum flows in streams to meet all uses and in negotiations on interstate water issues

Questions?

- When drinking the water, remember the spring - Old Chinese Proverb

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